

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S15	6	S13 and @ad < "20040301"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/27 13:44
S17	3	S16 and @ad < "20040301"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/12/12 14:34
S33	0	"20020038320".pn. and (hash with compar\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/27 10:48
S34	1	"20020038320".pn. and (hash and compar\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/27 10:48
S35	1	"20020038320".pn. and (hash\$2 with compar\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/27 10:49
S36	2	("2004/0098667").URPN.	USPAT	OR	OFF	2007/11/27 13:43
S37	9	XML with schema with equivalen\$2	USPAT	OR	OFF	2007/11/27 13:44
S38	9	S37 and @ad < "20040301"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/27 13:44
S39	101	schema near2 equival\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/12/12 14:33

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S40	56	S39 and @ad < "20040301"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/12/12 14:34
S41	22	S40 and XML	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/12/12 14:48
S42	3	normaliz\$3 with schema with order with (component\$1 element\$1)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/12/12 14:49


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 Terms used: **schema equivalence**

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### 1 [Conjunctive query equivalence of keyed relational schemas \(extended abstract\)](#)



Joseph Albert, Yanis Ioannidis, Raghu Ramakrishnan

 May 1997 **Proceedings of the sixteenth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems PODS '97**

Publisher: ACM Press

 Full text available: [pdf\(1.25 MB\)](#)

 Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

### 2 [Theoretical foundations of schema restructuring in heterogeneous multidatabase systems](#)



Joseph Albert

 November 2000 **Proceedings of the ninth international conference on Information and knowledge management CIKM '00**

Publisher: ACM Press

 Full text available: [pdf\(234.55 KB\)](#)

 Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

### 3 [Composing schema mappings: Second-order dependencies to the rescue](#)



Ronald Fagin, Phokion G. Kolaitis, Lucian Popa, Wang-Chiew Tan

 December 2005 **ACM Transactions on Database Systems (TODS)**, Volume 30 Issue 4

Publisher: ACM Press

 Full text available: [pdf\(466.58 KB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A schema mapping is a specification that describes how data structured under one schema (the source schema) is to be transformed into data structured under a different schema (the target schema). A fundamental problem is composing schema mappings: given two successive schema mappings, derive a schema mapping between the source schema of the first and the target schema of the second that has the same effect as applying successively the two schema mappings. In this article, we give a rigorous seman ...

**Keywords:** Data exchange, certain answers, chase, composition, computational complexity, conjunctive queries, data integration, dependencies, metadata model management, query answering, schema mapping, second-order logic, universal solution

#### 4 View generation based on equivalence framework in object-oriented multidatabase systems



Kan-Sheng Shi, Hong-Jun Lu

April 1994 **Proceedings of the 1994 ACM symposium on Applied computing SAC '94**

**Publisher:** ACM Press

Full text available: pdf(501.08 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

**Keywords:** conflict resolution, multidatabase, object-oriented view, schema integration, visualization

#### 5 Equivalence and optimization of relational transactions



Serge Abiteboul, Victor Vianu

January 1988 **Journal of the ACM (JACM)**, Volume 35 Issue 1

**Publisher:** ACM Press

Full text available: pdf(3.74 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A large class of relational database update transactions is investigated with respect to equivalence and optimization. The transactions are straight-line programs with inserts, deletes, and modifications using simple selection conditions. Several basic results are obtained. It is shown that transaction equivalence can be decided in polynomial time. A number of optimality criteria for transactions are then proposed, as well as two normal forms. Polynomial-time algorithms for transaction opti ...

#### 6 On the semantic equivalence of heterogeneous representations in multimodel multidatabase systems



Dipayan Gangopadhyay

December 1991 **ACM SIGMOD Record**, Volume 20 Issue 4

**Publisher:** ACM Press

Full text available: pdf(553.40 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

We present in this paper an extensible metalevel system, called M(DM), in which the syntax and the semantics of data models, schemas, and databases can be uniformly described. We show with examples how to derive in M(DM) the semantic equivalence (or lack thereof) of symbols across different representation systems. We argue that, because of the inherent incompleteness of legacy databases, semantic equivalence must in general be ascertained by additional a posteriori assertions that are exte ...

#### 7 A comparative analysis of methodologies for database schema integration



C. Batini, M. Lenzerini, S. B. Navathe

December 1986 **ACM Computing Surveys (CSUR)**, Volume 18 Issue 4

**Publisher:** ACM Press

Full text available: pdf(3.41 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

One of the fundamental principles of the database approach is that a database allows a nonredundant, unified representation of all data managed in an organization. This is achieved only when methodologies are available to support integration across organizational and application boundaries. Methodologies for database design usually perform the design activity by separately producing several schemas, representing parts of the application, which are subsequently merged. Database sc ...

#### 8 Expressiveness and complexity of XML Schema



Wim Martens, Frank Neven, Thomas Schwentick, Geert Jan Bex  
September 2006 **ACM Transactions on Database Systems (TODS)**, Volume 31 Issue 3

Publisher: ACM Press

Full text available: pdf(558.45 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The common abstraction of XML Schema by unranked regular tree languages is not entirely accurate. To shed some light on the actual expressive power of XML Schema, intuitive semantical characterizations of the Element Declarations Consistent (EDC) rule are provided. In particular, it is obtained that schemas satisfying EDC can only reason about regular properties of ancestors of nodes. Hence, with respect to expressive power, XML Schema is closer to DTDs than to tree automata. These theoretical r ...

**Keywords:** XML, XML Schema, validation

9 Data exchange and schema mappings: Quasi-inverses of schema mappings



Ronald Fagin, Phokion G. Kolaitis, Lucian Popa, Wang-Chiew Tan

June 2007 **Proceedings of the twenty-sixth ACM SIGMOD-SIGACT-SIGART  
symposium on Principles of database systems PODS '07**

Publisher: ACM Press

Full text available: pdf(321.65 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Schema mappings are high-level specifications that describe the relationship between two database schemas. Two operators on schema mappings, namely the composition operator and the inverse operator, are regarded as especially important. Progress on the study of the inverse operator was not made until very recently, as even finding the exact semantics of this operator turned out to be a fairly delicate task. Furthermore, this notion is rather restrictive, since it is rare that a schema mapping ...

**Keywords:** chase, data exchange, data integration, dependencies, inverse, metadata  
model management, quasi-inverse, schema mapping

10 Preserving update semantics in schema integration



Vânia M. P. Vidal, Marianne Winslett

November 1994 **Proceedings of the third international conference on Information and  
knowledge management CIKM '94**

Publisher: ACM Press

Full text available: pdf(1.09 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we propose a methodology for schema integration where the semantics of updates is preserved during the view integration process. We propose to divide view integration into three steps: combination, restructuring, and optimization. In the view combination step, we define the combined schema that contains all original views, plus a new set of constraints that express how data in distinct views are interrelated. The restructuring step is devoted to normalizing t ...

**Keywords:** schema integration, schema mapping, semantic model, update translation,  
user views


11 Program schemas with equality



Ashok K. Chandra, Zohar Manna

May 1972 **Proceedings of the fourth annual ACM symposium on Theory of computing  
STOC '72**

Publisher: ACM Press

Full text available:  [pdf\(1.06 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


We discuss the class of program schemas augmented with equality tests, that is, tests of equality between terms. In the first part of the paper we discuss and illustrate the "power" of equality tests. It turns out that the class of program schemas with equality is more powerful than the "maximal" classes of schemas suggested by other investigators. In the second part of the paper we discuss the decision problems of program schemas with equality. ...

## 12 [On the decision problems of program schemas with commutative and invertible functions](#)

Ashok K. Chandra

October 1973 **Proceedings of the 1st annual ACM SIGACT-SIGPLAN symposium on Principles of programming languages POPL '73**

Publisher: ACM Press

Full text available:  [pdf\(609.72 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)


We consider partially interpreted monadic schemas in which some functions are specified to commute, or some function is specified to be invertible. The decision problems considered are those of halting, divergence, equivalence, inclusion and isomorphism. It is shown that with either commutativity or invertibility alone, all these decision problems are solvable, whereas with both commutativity and invertibility, all become unsolvable. These results are also related to the decision problems for fi ...

## 13 [Decidable Properties of Monadic Functional Schemas](#)

Edward Ashcroft, Zohar Manna, Amir Pnueli

July 1973 **Journal of the ACM (JACM)**, Volume 20 Issue 3

Publisher: ACM Press

Full text available:  [pdf\(711.41 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A class of (monadic) functional schemas which properly includes "Iarov" flowchart schemas is defined. It is shown that the termination, divergence, and freedom problems for functional schemas are decidable. Although it is possible to translate a large class of non-free functional schemas into equivalent free functional schemas, it is shown that in general this cannot be done. It is also shown that the equivalence problem for free functional schemas is decidable. Most of the resu ...

## 14 [Model independent assertions for integration of heterogeneous schemas](#)

Stefano Spaccapietra, Christine Parent, Yann Dupont



July 1992 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 1 Issue 1



Publisher: Springer-Verlag New York, Inc.

Full text available:  [pdf\(2.15 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)



Due to the proliferation of database applications, the integration of existing databases into a distributed or federated system is one of the major challenges in responding to enterprises' information requirements. Some proposed integration techniques aim at providing database administrators (DBAs) with a view definition language they can use to build the desired integrated schema. These techniques leave to the DBA the responsibility of appropriately restructuring schema elements from existing I ...

**Keywords:** conceptual modeling, database design and integration, distributed databases, federated databases, heterogeneous databases, schema integration

- ◆ [The equivalence of solving queries and producing tree projections \(extended abstract\)](#)   
Yehoshua Sagiv, Oded Shmueli  
June 1985 **Proceedings of the fifth ACM SIGACT-SIGMOD symposium on Principles of database systems PODS '86**  
Publisher: ACM Press  
Full text available:  [pdf\(1.10 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



- 16 [Four models for the analysis and optimization of program control structures](#)   
◆ Terrence Pratt  
May 1975 **Proceedings of seventh annual ACM symposium on Theory of computing STOC '75**  
Publisher: ACM Press  
Full text available:  [pdf\(607.07 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)



The analysis of the relation between the structure of a program and the function that it computes requires a decomposition of the program into its components. Traditionally this decomposition has been based on the common division of a program into subprograms, and ultimately into statements, expressions and individual variables and constants. In this paper an alternative decomposition is proposed that is based on the decomposition of a program into a set of kernel elements

- 17 [A survey of approaches to automatic schema matching](#)   
Erhard Rahm, Philip A. Bernstein  
December 2001 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 10 Issue 4  
Publisher: Springer-Verlag New York, Inc.  
Full text available:  [pdf\(196.22 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Schema matching is a basic problem in many database application domains, such as data integration, E-business, data warehousing, and semantic query processing. In current implementations, schema matching is typically performed manually, which has significant limitations. On the other hand, previous research papers have proposed many techniques to achieve a partial automation of the match operation for specific application domains. We present a taxonomy that covers many of these existing approach ...

**Keywords:** Graph matching, Machine learning, Model management, Schema integration, Schema matching

- 18 [An Assessment of Techniques for Proving Program Correctness](#)   
◆ Bernard Elspas, Karl N. Levitt, Richard J. Waldinger, Abraham Waksman  
June 1972 **ACM Computing Surveys (CSUR)**, Volume 4 Issue 2  
Publisher: ACM Press  
Full text available:  [pdf\(4.36 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)


- 19 [Deciding properties of transactional schemas](#)   
◆ Serge Abiteboul, Victor Vianu  
June 1985 **Proceedings of the fifth ACM SIGACT-SIGMOD symposium on Principles of database systems PODS '86**  
Publisher: ACM Press  
Full text available:  [pdf\(578.69 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

20 Research session: integration and mapping #1: Designing information-preserving mapping schemes for XML

Denilson Barbosa, Juliana Freire, Alberto O. Mendelzon

August 2005 **Proceedings of the 31st international conference on Very large data bases VLDB '05**

Publisher: VLDB Endowment

Full text available:  pdf(343.75 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

An XML-to-relational mapping scheme consists of a procedure for *shredding* documents into relational databases, a procedure for *publishing* databases back as documents, and a set of constraints the databases must satisfy. In previous work, we defined two notions of information preservation for mapping schemes: *losslessness*, which guarantees that any document can be reconstructed from its corresponding database; and *validation*, which requires every legal database to corr ...

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RA DeMillo, AJ Offutt - IEEE Transactions on Software Engineering, 1991 - doi.ieeecs.org

 ... Completely **determining** the sufficiency condition implies knowing in advance ... **Type**

 Description CT constant replacement **dsa data** statement alterations ... **equivalent**. ...

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[Programming with abstract data types - all 6 versions »](#)

B Liskov, S Zilles - Proceedings of the ACM SIGPLAN symposium on Very high level ..., 1974 - portal.acm.org

 ... as "abstraction" and "abstract machine." In this section we analyze the meaning of "abstraction" to **determine** what kinds ... of a **data type** as **equivalent** to a ...

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E Rahm, PA Bernstein - ... VLDB Journal The International Journal on Very Large Data ..., 2001 - Springer

 ... The implementation of Match should therefore only **determine** match candidates ... 3. **Equivalence** pattern ... such properties as name, description, or **data type** of schema ...

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SJ GOODMAN, R ST - Molecular Ecology, 1997 - ingentaconnect.com

 ... **data** and **determining** their significance ... greatly between loci) and W is not **equivalent** to the ... originally conceived for the analysis of sequence and RFLP **data**. ...

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[Real-world Data is Dirty: Data Cleansing and The Merge/Purge Problem - all 17 versions »](#)

MA Hernández, SJ Stolfo - Data Mining and Knowledge Discovery, 1998 - Springer

 ... during the merge phase, to **determine** their **equivalence** ... records the rule-program correctly deems **equivalent**. ... range of equational theories on various **data types**. ...

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»

L Cardelli, P Wegner - ACM Computing Surveys (CSUR), 1985 - portal.acm.org

 ... Ada had a simpler notion of **type equivalence** with severely ... Its notion of **type** includes classes whose instances may ... Procedures and **data** declarations of a class ...

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The algebraic specification of abstract data types

JV Guttag, JJ Horning - Acta Informatica, 1978 - Springer

... every value of the **type** would be **equivalent** to every ... The Algebraic Specification of Abstract **Data Types** ... does not exist a function R for **determining** sufficient-Cited by 293 - [Related Articles](#) - [Web Search](#)Clone detection using abstract syntax trees - all 23 versions »

ID Baxter, A Yahin, L Moura, M Sant'Anna, L Bier - Proceedings of the International Conference on Software ..., 1998 - doi.ieeecomputersociety.org

... are an indication that the **data type** operation should ... and then **determine** if fragment pairs are **equivalent**. Since **determining** that even a single fragment halts ...Cited by 308 - [Related Articles](#) - [Web Search](#)Determining semantic similarity among entity classes from different ontologies - all 8 versions »

MA Rodriguez, MJ Egenhofer - Knowledge and Data Engineering, IEEE Transactions on, 2003 - ieeexplore.ieee.org

**Determining** Semantic Similarity among ... among similar, but not necessarily **equivalent** entity classes ... has been made concerning syntactic (ie, **data types** and formats ...Cited by 245 - [Related Articles](#) - [Web Search](#)

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IET JNL IET Journal or Magazine

IEEE CNF IEEE Conference Proceeding

IET CNF IET Conference Proceeding

IEEE STD IEEE Standard

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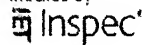
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